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JOHNSTON'S

SMALL FRUIT CULTURIST.

WRITTEN FROM PRACTICAL EXPERIENCE

By M. W. JOHNSTON,

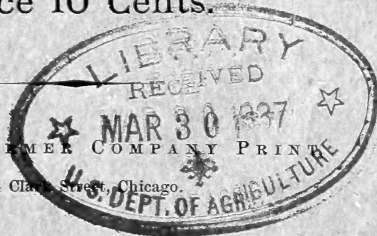
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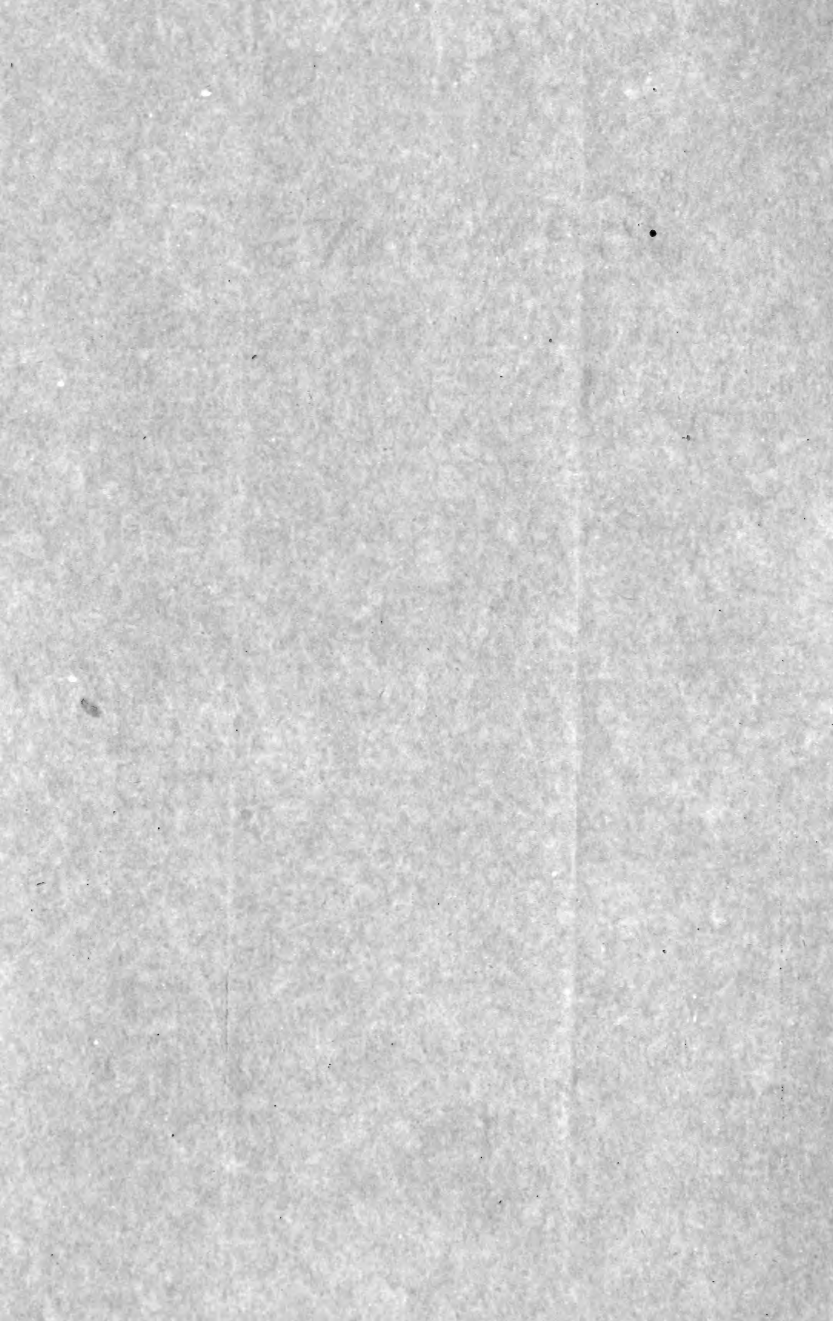
JOHNSTON'S NURSERY, SOUTH BEND, Ind.

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JOHNSTON'S SMALL FRUIT CULTURIST.

WRITTEN FROM PRACTICAL EXPERIENCE.

PRICE 10 CENTS.

MY object in writing the following pages is mainly to furnish to new beginners in fruit raising, such information as shall enable them to avoid the errors, and consequent failures of my first endeavors, and thereby reach success more easily and speedily.

And while I would not presume to instruct the hundreds whose names are prominent in the horticultural world, but whom I would readily acknowledge as my own instructors, yet I trust the directions will be found of use to those, who, without experience, are about to enter upon this — if properly managed — pleasant and profitable employment. And to such I would say, let your hopes be high, as your efforts will be in proportion, but be not too extravagant in your expectations of financial success, at least for the first two or three years, and make up your mind to get much of your reward for that time from the pleasures of the business. Although I labored long in the dark and met with many discouragements, yet there was much of real pleasure peculiar to the business, and from my experience I make up such instructions as I hope will help you to more perfect and speedy success, and cause your abundant fruits to be a source of joy and gladness to others.

M. W. JOHNSTON.

SOUTH BEND, IND., February, 1868.

INTRODUCTION.

THE cultivation of fruit is fast becoming of national importance, and perhaps there is no interest that has been so greatly augmented during the past ten years, or that bears more directly upon the health and happiness of our people. A taste for fruit seems to have been given to all mankind, indicating that it was intended for their food, and most bountifully has nature supplied it. Man was first placed in a "garden," "to till and keep, and of the *fruit* to eat," and though by habit, taste and desire we are far removed from that condition of purity and bliss, and the ground cursed for man's sake, so as to be less friendly, and prone, rather, according to the terms of the curse, to bring forth "thorns and thistles," yet perhaps in these two respects, our love for fruit and the earth's readiness to produce it, there has been the least change, and nature in a greater measure still works out her "original designs."

Whoever saw a child that did not love fruit, or a clime or locality where he could live, that would not produce it. If one variety fails, another of the same family will succeed, so that almost everywhere the strawberry, raspberry, apple, etc., may be represented; and man has but to exercise the faith of an ordinary intelligent cultivator, to "put forth his hand and take and eat," of what is most emphatically, to him, the "Tree of life," guarded against his approach by no "flaming sword," but rather protected for his use, and his attention called to it, not only by his natural appetite, but also by his love for the beautiful.

We often hear the excuse made, "I would raise fruit, but the boys steal it!" But that is just the reason that everybody should raise it, not of course to have it stolen, but by its prevailing abundance to satisfy the universal desire for it. This is one of nature's imperative laws, as evinced by the craving of the natural, not a perverted appetite, and the sure penalty following its infraction are the evils that result from an erroneous diet, and also that lawless-

ness that disregards the rights of ownership, and appropriates fruit wherever found.

Not only does fruit retain its beneficial and invigorating properties as a diet, responding promptly to the wants of man's physical nature; but also in its cultivation do we find employment the most delightful, and elevating in its tendency. The preparation of the soil, the selection of varieties of fruit, the giving of needed care and cultivation and the execution of plans that reach far into the future, clothed in ideal good, enlists our energies and interests; while, as in the strawberry, the living green of spring, giving place to, or rather looking out from its snowy covering of abundant bloom, followed rapidly by the glorious, blushing, delicious fruit, fulfilling our most sanguine hopes, cultivates and gratifies in the highest degree our love for the beautiful, and aids to develop in man pure and noble sentiments. Thus do we believe that there is a providence at work developing the fruit interests, and that in proportion as we become a fruit raising and fruit eating people, will we also become a healthy, moral and happy people.

GENERAL CULTIVATION, LOCATION, Etc.

Although the cultivation of fruit is very simple in all its details, and the proportion of success perhaps far greater than even in agriculture, yet there is no business that requires more care and caution, and in which an intelligent and well matured plan at the start is more necessary for full and complete success.

There are thousands cultivating small fruits for pleasure, for family use, and whatever surplus they may have, for market, who can perhaps afford to be careless, and make mistakes, and suffer failure; but those who make a sole business of fruit raising, and depend upon it for a livelihood, will soon make shipwreck of their hopes and fortunes if they add carelessness and extravagance and costly errors, to the mishaps which horticulture has in common with all other kinds of business. To have a good degree of success in a single crop of one variety of fruit, is well; but to develop in full your resources of soil, location and climate; to understand and supply the peculiar wants of different plants, and give the best cultivation at the least expense — to succeed intelligently and financially — requires constant care and thorough investigation.

LOCATION.

This first thing is important, but if you are bound to almost any location, plant fruit, for it will grow nearly everywhere. If you lack protection, plant

evergreens; if your soil is thin and poor, deepen and enrich it, and give increased cultivation; use all the advantages you have, and a good degree of success will be yours; and remember that it is difficult to find a location just right in all respects and yours may possess advantages. But if you are at liberty to choose, look first to the protection of some friendly hill or dense permanent wood, against prevailing winds; snow is too good a mulch for strawberries, to be blown away, and high winds will often make havoc with the growing and tender raspberry canes. Plants thus protected are possessed of more vigor to stand the drouths of summer, and give a more abundant yield of fruit.

Rolling land is also preferable to that which is very flat; as water will not stand upon it, and the east and south slopes can be taken advantage of for early fruit, and by planting late varieties on the west and north, the fruit season can be greatly prolonged. High, rolling land is also less affected by untimely frosts, and this is of great importance where the early varieties of strawberries are grown.

The soil is the next important item, and though in the almost innumerable varieties of fruits nearly every kind of soil can be suited, yet the best results are obtained and some of the choicest varieties perfected, only upon dry, rich, loamy soils, with also a slight mixture of clay, or clay subsoil. I think what is termed a clay-loam, grows to perfection the largest varieties of choice fruits at any rate, firm soils are preferable to very light ones, though fruits that succeed in any considerable degree on light sand will, on account of their more rapid maturity, generally be superior in flavor, though less in quantity, to the same fruit grown on heavy soil. As an instance of the adaptation of varieties to soil, I will mention the Jucunda strawberry, which I have seen fail utterly on light though productive sand, where the Wilson's success was full medium; while on even moderately firm land it succeeds admirably, and scarcely has a superior for beauty and flavor. On the other hand I have seen the medium sized berries from the sand districts sell at a fair price during a glut in the Chicago market, while fruits fully double its size raised on the heavy soil around that city, mould in the crates on account of inferior flavor.

It is well to avoid changing plants from heavy to light land, though in some instances I have had very good success. Raspberry tips seem to do well enough, and strawberries moderately well, but currants and plants of similar habits and nature, I have seen stand perfectly still for a couple of years, though the land was well enriched and all circumstances favorable to growth. As a rule I would much prefer to transplant into more favorable circumstances than those under which the plants were grown, and to avoid all hot-house and unnaturally forced stock.

I do not wish to be understood as discarding or lightly esteeming sandy land; it has many real advantages; ease of cultivation; is less affected by

drouth; is earlier in season, and responds more promptly to every pound of manure given to it, and he who locates his fruit garden there, if he will give proper care and culture, need not fear that his hopes have a sandy foundation.

Of all soils, the low, wet and cold one is the most unfriendly; avoid it as you would failure and disappointment in any other form, for they are surely lurking there. The hard soil may be softened, the barren one enriched, but the cold one can never be warmed profitably, while so many warm and fertile acres invite to surer and easier success.

CULTIVATION AND USE OF MANURE.

There are but few soils that are not benefited by the use of manure, which need not be applied in copious quantities, even on thin soils; but if well rotted and thoroughly mingled with the soil, a light dressing upon the top will give aid to the growing crop immediately. If common barnyard manure — the best of all — is difficult to get, the want may be in a great measure made up by extra cultivation and stirring the soil, the great advantage of which is not half appreciated, even by farmers and fruit growers. The more you stir the soil, the more it takes in from the atmosphere, both of moisture and food, and I have seen a good yield of both raspberries and strawberries, resulting from extra cultivation alone.

If you are a pioneer in fruit raising in your locality, without experience yourself or the example of others in manner of cultivating, or the varieties adapted to your soil and climate, then make haste slowly for a year or two, and do not venture too much on a chance throw. You may be impatient, and want to do great things, but remember that a small success is better than a great failure, and he who is satisfied with small things for a while, generally has great things to satisfy him afterwards. With the growing disposition to get a living without work, to flock to our cities and thus rapidly and disproportionately increase the consumers over the producers, there is no branch of business that offers such brilliant opportunities, or promises such sure and golden returns, as the cultivation of the soil, either for fruit, grain or stock; and among them all, the American fruit grower, if thorough and intelligent, may take a high stand as the successful man and the true benefactor of his race.

STRAWBERRIES.

The strawberry may properly be termed a universal fruit. New varieties are easily obtained, with a tendency to adapt to every location, and the plants are multiplied so rapidly as to be within reach of all. Some complain of the constant increase of new varieties, and are disposed to impede their introduction by clogging them with doubt and suspicion. But such should remember that our great advancement in the cultivation of this and all other

fruits, is due mainly to a free and open field, and to the sure financial reward, both in disseminating new varieties and cultivating the old; and for the reasons given, that a thousand different localities need a thousand different varieties of fruit, with corresponding peculiarities, and the fact that many localities are still without their successful sort, all calls loudly for a further and speedy increase of varieties. Thus, while a fair trial and reasonable guarantee may justly be exacted of each new claimant to favor, still, if it be a truly meritorious sort, its advent should be hailed as a truly needed acquisition.

SOIL AND CULTIVATION.

What has been said about light and heavy soils applies most emphatically to the strawberry. Light sand will give earlier fruit, always superior in flavor but scarce ever a large yield; a firm loam, with clay subsoil, *deeply* tilled, will generally produce the most profitable results, and on such soils

DEEP TILLAGE

is of the utmost importance. Pulverize the soil thoroughly twenty inches deep and you will be independent of both flood and drouth. In the first case the surplus water will soak away more readily, and if you use the cultivator frequently, you will be surprised to find your ground moist and plants green and vigorous, when everything else is parched and dried. Do not think your success depends upon the extravagant use of manure; in fact, but few varieties succeed well with extreme high culture, though fair, generous culture is probably best for nearly all. Apply rotted manure to the top after plowing and before planting, and afterwards upon the rows as the bed becomes old.

HILLS AND ROWS.

On small plantations when it is desired to make as much as possible from a limited space, the hill system is probably the best. In close planting less manure is required for the same number of plants; the plants make larger stools and the overhanging leaves make a fine protection to the early blossoms from frost; the ground can be stirred all around the plant and not left to weeds and hardness as in the wide row of matted plants. It is claimed also by the advocates of this system that the fruit is produced in greater perfection and abundance.

While I do not doubt that this is often true, yet I am not prepared to recommend its universal adoption. The objections to it are, the plants are liable to overbear and either die or remain barren; the revenue must be from fruit alone, unaided by the propagation of plants; the extra work in close planting where a horse cannot be used, and the fact that hand culture cannot sufficiently stir the soil; the plants are more liable to winter-kill, and this leads me to speak of the

STRUCTURE OF THE PLANT.

As is generally understood, the roots of the strawberry die every year soon after fruiting and new ones form above them, together with a new crown upon the top of the old one, so that after successive seasons the lower portion of the plant is a hard, woody spike, sometimes two inches long, that has been gradually drawn down into the ground by the new roots formed above each successive year, and this, surrounded by a mass of dead decaying roots, which must be a fruitful source of disease, particularly as its juices must in a greater or less degree be absorbed by the new growth to which it is joined above, which certainly can not be conducive to healthy plant life or the production of fruit, but also the ground becomes so honey-combed by the dying and shrinking of these old roots as to be entirely destitute of that compactness necessary for the support of the new roots. Hence, comparatively feeble growth, and my experience has been, great injury and often death to the plant in winter.

This objection may also be made against the row system, but there it can be remedied, while in the hill it cannot. I have seen it particularly in slovenly cultivation, where the rows were not renewed, as I shall soon explain, but the old plants were left year after year and the rows became so porous that the foot would readily sink into them by the weight of the body; and a Wilson patch of five acres, the best one I ever saw, was entirely destroyed the winter after the second fruiting, as I firmly believe, from no other cause.

Many adopt the hill system, and put the rows three feet apart one way, so as to admit of horse culture. This often gives good satisfaction, but I think a better way is to plant two feet each way, which will admit a narrow cultivator, both ways, and any method that admits of the most complete horse culture has advantages that will go far to establish its claims to preference, as it takes the place of the more expensive hand work in the destruction of weeds, and also counteracts the injurious effects of drouth—a truth, I feel, I cannot too often repeat.

ROW SYSTEM.

For convenient field culture, plant one foot apart in rows four feet wide. And now comes the question of *Cultivation*—How shall the plants be treated to make them grow properly and keep the ground clear of weeds? I speak from experience when I say it can mostly be done with a horse. For this purpose provide a light cultivator, with common drag teeth, which a careful hand, even a boy, can run so close to the plants as to break the entire ground, without injuring or disturbing them. This should be done every week, at least every two weeks, which will effectually destroy all weeds and grass just germinating, and will keep the ground open and light, which is favorable to the growth of plants. If the ground has been well prepared before planting, the

work can be all done in this way, with the exception perhaps of one hoeing, up to the time that the new runners begin to set in September—as the runners are thrown out the cultivators will keep them drawn closely together and lengthwise of the row, and now a broad toothed cultivator is better than the first, as it will throw a little dirt upon the runners, which will aid them greatly in rooting.

I have said the objection to old plants could be obviated in the row system, which I will now illustrate: Plants set in spring, if they do well will form rows by fall, one and a half to two feet wide, of plants standing close together. About fruiting time next season, these plants will show a disposition to provide new ones, by throwing out almost innumerable runners.

We will now immediately, after fruiting, plow up the entire space between the rows, making a back furrow in the center, and plow off also a portion of the row, from each side, leaving them eight inches to a foot wide. Now level down the plowed portion with cultivator, and you have provided mellow soil on both sides of each row for the new plants to take root in, which will make your rows, by fall, two feet wide again, and one half or more will be *new plants*. Now, after fruiting again, the second year, plow up the space between the rows as before and the new plants last formed on one side, together with the strip of *old plants* left at last plowing, and you have left only the new and healthy plants against which no objection can be made, and in this way a bed may be perpetuated for a number of years. The space between the rows should be cultivated once or twice during the month of May, to insure against weeds and grass, which would materially interfere with the above process of plowing and leveling, and after fruiting, while the new plants are growing, frequent cultivation will insure strong plants in abundance.

PLANTING — TIME AND MANNER.

This should never be done in a careless, hurried manner; the beauty of the field, as well as the yield, depends upon the rows being full and complete. Of course it is expected that every one will go over his field a few days after planting and replace those that have failed, if he has the plants to do it, but if you are just commencing and have bought your plants from a distance, you cannot do this, and I have never yet seen a field where the first planting failed largely, that was ever brought to any considerable degree of perfectness afterwards.

CONDITION OF THE SOIL.

As a general thing plants do not do as well on recently prepared ground, especially if it be light and sandy, and the weather very dry. For spring planting on mellow soils, it is well to plow it the fall previous, which will destroy the worms and give an opportunity to do early planting without plowing the land when wet, which is very injurious. If planting has been

delayed, the weather hot and ground dry, then drag it very thoroughly, and, if convenient, roll with heavy roller. Mark out with a one-horse plow running just deep enough to scrape off the dry dirt from the top. This gives firm, moist earth to set the plants in, and they will succeed even during a drouth that would destroy them as generally planted.

SETTING THE PLANT.

Use a dibble made of wood, or what is much better, spring steel, ten inches long, three inches wide just below the neck, upon which the handle is placed, and tapering to a roundish point. Thrust it into the ground perpendicularly; work it back and forth in order to make ample room for the plant, the roots of which, instead of all being huddled into a close mass, may be spread out like a fan; place in the hole against one side with the crown just above the top, then thrust in the dibble again about an inch off from the other side of the hole, and in a direction that will intersect with the bottom of it; press the intervening earth *firmly* to the plant; withdraw the dibble; fill up the hole, last made and the work is done. The plants should be well wet when taken to the field unless circumstances are very favorable, cloudy, moist weather, &c. It is also a very good and speedy way, where the ground is compact and free from sods or other obstructions, to plow a straight, well defined furrow, place the plant against the straight side and draw the loose dirt of the furrow against it by hand.

TRIMMING

the roots has its advantages, cutting off from a quarter to a third of their length, as they are liable when very long to be doubled up, and be in a cramped and unnatural position, and besides, when cut they throw out new fibers much more readily and abundantly.

The question is often asked: When is the best

TIME TO PLANT?

I answer, when you are ready, and in a situation to give it the necessary attention and do your work well, and then never wait for a better time, for this is of more importance than the peculiar advantages of any season. Spring is the "planting time" and the season of growth which promptly repairs the injury received by the plant in taking up. In early spring the plants live easier and get an earlier start and more firmly established by the time the heat and drouth of summer comes; but they are liable to bear too much fruit, which if not picked off in the bud, is often fatal. Late spring planting requires more care and better work, and plants are more liable to heat in transportation, but when once established, they often make the best beds, as there is not so much disposition to fruit. It often happens that new beginners who are anxious to plant largely, find themselves with so much other

business on hand in spring, and also so little money, that they determine to defer the matter till fall or the next spring. Now I acknowledge here are two very good reasons for delay; but while you put off the bulk of your scheme, you may provide for taking it up successfully then, and insure against a great expense and great failure, by setting a few plants now, and thus raise your own stock. You can count on twenty-five to fifty fold increase on strawberries, and five to ten on those raspberries that propagate from the tip by fall; so that a couple of thousand of strawberries, assorted, at an expense of (including cultivation), \$20 to \$25, and a single thousand raspberries, assorted, at about the same expense, will give you the required stock, better than you can buy, and also give you a fine selection of fruit the next season from the raspberries and a portion of strawberries saved for the purpose, and you will have a little experience that may be of immense value to you. Your mistakes, if you make any, will not be large and costly ones, of sufficient magnitude to discourage and, perhaps, drive you in disgust from the business; while your little success may give that satisfaction, and impart that zeal and confidence necessary to success in any business. You will also be in the best possible condition to avail yourself of the advantages of

FALL PLANTING,

which may be commenced even in August, as early as some of the new plants are well rooted, and that too, without losing any of the half formed plant, and new runners just growing, as they may all be moved with the one strong plant to which they are attached, by using a trowel and doing the work in a cloudy, moist time. I have had the most complete success in this, the new rows by winter being nearly or quite equal to those set in spring.

But I do not wish to be understood as advocating early fall planting, extensively at any rate, where plants have to be brought from a distance. Plants are not matured, are liable to heat in packing, and if received in a dry, hot, time are very liable to fail. But later in the season circumstances are more favorable, and plants set in October or first of November will almost immediately throw out new fibers and establish themselves sufficiently before the ground freezes. Plants set in fall generally yield a paying crop of fruit the next season, and produce plants earlier in the season, and in greater in abundance.

MULCHING,

When done for winter protection should be put on as soon as the ground is frozen up in early winter, or it will do if put on towards spring, as most of the injury is done by the frequent freezing and thawing of early spring, and to prevent this is almost the only use of the mulch. Straw, corn stalks, sorghum bagase, &c., are used for the purpose, and needs to be only thick

enough to cover the ground from the rays of the sun, which prevents the thawing up of the top of the ground, and the consequent heaving of the plants.

Mulching is especially important for fall setting, as the plants on most soils are very liable to heave entirely out, or at least sufficiently to break the small fibers thrown out after planting, and upon which the life and vigor of the plant depends. In spring the mulch may be parted just above the plants and be left on the ground for summer mulch, which is very beneficial, keeping the ground moist and the fruit clean. Where summer mulching alone is practiced, probably rye straw is the best that can be obtained, as it answers every purpose admirably, and is more easily applied than any other material, on account of its length. It is recommended to cut the leaves and fruit stalks off near the ground, immediately after fruiting, which will enable the plant to recover sooner and facilitate growth of new foliage.

STRAWBERRIES. — DESCRIPTION OF VARIETIES.

Those marked *S.* will not bear unless planted near other sorts.

AGRICULTURIST. — Very large, irregularly shaped berry, with neck; color, light crimson; moderately firm and good flavor. *S.* 20 cents per doz.; \$1.00 per 100.

AUSTIN, or SHAKER. — Very large, roundish; large specimens often flattened. Very hardy; not the best flavor; not a heavy bearer, except with high cultivation. *S.* 20 cents per doz.; \$1.00 per 100.

BARTLETT, (*Boston Pine*). — Medium to large; light crimson; firm; good flavor; early; good for market. *S.* 20 cents per doz.; \$1 per 100.

BUFFALO, (*McAvoy's Superior*). — Large, irregular, uneven on surface; dark crimson; good flavor and productive. *P.* 20 cents per doz.; \$1.00 per 100.

BROOKLYN SCARLET. — Medium to large, regular, bright scarlet; flavor, rich and good. *S.* 20 cents per doz.; \$1.00 per 100.

BYBERRY. — Very large, irregular; dark color; good flavor; firm and productive. We hope much from it. *S.* 30 cents per doz.; \$1.50 per 100.

BARNES' MAMMOTH. — New; very strong plant; berry very large, early and desirable. 75 cents per doz.; \$4.00 per 100.

CHORLTON. — Medium, round, firm, productive; quite acid. *S.* 20 cents per doz.; \$1.00 per 100.

COL. ELLSWORTH. — Very large, irregular; neck dark; firm, productive. *S.* 20 cents per doz.; \$1.00 per 100.

CRIMSON CONE. — Medium, regular, conical, beautiful crimson, late. *P.* 20 cents per doz.; \$1.00 per 100.

CUTTER. — Medium, conical, bright scarlet, early, firm; good flavor. *S.* Same price.

DURAND'S SEEDLING.—New; highly recommended in New Jersey, where it originated, as a market berry. 75 cents per doz.; \$4.00 per 100.

DOWNER'S PROLIFIC.—Medium to large; round; light color; rather soft; medium flavor, early, hardy and productive. *S.* 20 cents per doz.; \$1.00 per 100; \$4.00 per 1,000.

ELLA.—New; said to be an enormous bearer. 75 cents per doz.

FILLMORE.—Large and uniform in size; dark color; sweet and good; does not succeed well here, but on heavy soils it is highly esteemed. *P.* 25 cents per doz.

FRENCH'S SEEDLING.—Large, deep scarlet, conical; excellent flavor; moderately firm; very early. I esteem it highly for family or near market. *P.* 20 cents per doz.; \$1.00 per 100; \$4.00 per 1,000.

GOLDEN QUEEN.—A beautiful berry with us, though not fruited extensively. Large, roundish, a light golden color and excellent flavor. A general favorite. *P.* 30 cents per doz.; \$2.00 per 100.

GREEN PROLIFIC.—Very large, round, quite firm; not the best flavor, but a good, reliable market berry, and on good ground an enormous bearer. Plant very hardy and strong growing; fine for hill culture. *P.* 20 cents per doz.; \$2.00 per 100; \$4.00 per 1000.

HOOKE.—Large, slightly conical, dark, very sweet and rich. Too soft for distant market, but very desirable for family. *S.* 25 cents per dozen.

IOWA, (Washington.)—Large, round, light color; very early and productive. Is recommended for cultivation by Ohio Pomological Society. *S.* 20 cents per doz.; \$1.00 per 100; \$4.00 per 1000.

IDA.—Medium to large, slightly conical, bright scarlet, acid, but good. Enormously productive; promises to be valuable for market. *P.* 20 cents per doz.; \$1.00 per 100; \$4.00 per 1000.

JUCUNDA, or 700.—Fails on light sand; succeeds finely on moderately firm soil; one of the most beautiful and best flavored berries grown. Large, conical, bright crimson, with a wax-like appearance. *P.* 30 cents per doz.; \$1.50 per 100.

JENNY LIND.—Early, medium to large. Excellent flavor; formerly very productive, but for two years past quite otherwise. I am inclined to think it is too weak to fertilize itself, as its heavy yield was when near the Wilson, and its failure when standing alone. *P.* 20 cents per doz.; \$1.00 per 100.

LENNIG'S WHITE, (Albion White, White Pine Apple).—Large, conical, flesh white, melting, sweet and delicious; plant vigorous and moderately productive; desirable. *S.* 30 cents per doz.; \$1.50 per 100.

LEED'S PROLIFIC.—Medium, light colored, not fully tested. *S.* 30 cents per dozen; \$1.50 per 100.

MEAD'S SEEDLING.—Medium to large, conical, light color, firm, acid, productive. *S.* 50 cents per dozen.

MONITOR. — Large, roundish, conical, with neck; scarlet, firm, sub-acid, productive; a good market variety. *S.* 20 cents per doz.; \$1.00 per 100.

LA CONSTANCE. — Large, regular, conical, crimson, good flavor, firm, late. A beautiful berry but not productive. *S.* 50 cents per dozen.

METCALF'S EARLY. — This was very early and productive with me last season, but smaller and not as firm as I expected. As it seemed to fail generally, I would not recommend it till another year's trial. 20 cents per doz.; \$1.00 per 100; \$4.00 per 1000.

NEW JERSEY SCARLET. — Medium, conical, bright scarlet, necked, firm and good flavor, early and productive. *S.* 20 cents per doz.; \$1.00 per 100; \$4.00 per 1000.

NAOMI. — A new variety, of promise, highly esteemed in Pennsylvania. Plant very strong and vigorous. *S.* 30 cents per doz.; \$2.00 per 100.

RIPPOWAM. — Valuable mainly on account of its great size. *P.* 50 cents per doz.

PHILADELPHIA. — Highly esteemed at the East, as early and productive. *P.* 30 cents per doz.; \$2.00 per 100.

PRINCE OF ARGENTINE. — New; highly recommended as large, productive and good; has not fruited with me only on spring-set plants. *P.* \$1.00 per doz.; \$5.00 per 100.

RUSSELL'S PROLIFIC. — Very large, irregular, roundish, only moderately firm, flavor good. Does best on heavy soils, I think. *P.* 20 cents per doz.; \$1.00 per 100; \$4.00 per 1000.

VICOMTESSE HERICART DE THEURY. — Large, irregular, conical, dark scarlet, firm, sweet and excellent; early and productive. *P.* 30 cents per doz.; \$2.00 per 100.

WHITE ALPINE. — Recommended as being very sweet; has not fruited with me. *P.* 50 cents per doz.

WILSON'S ALBANY. — Too well known to need description. One of the most vigorous and productive varieties known, and undoubtedly the standard as a market berry. *P.* 20 cents per doz.; \$1.00 per 100; \$4.00 per 1000.

DR. NICAISE. — Introduced by Frost & Co., of Rochester, N. Y., and sold for \$10.00 per dozen. It is claimed that nine berries have filled a quart measure. Its great size is its principal recommendation. Plant beautiful and strong. \$0.75 per plant.

RASPBERRIES.

As this fruit is becoming better known and its value appreciated, its cultivation is greatly extended. The tender sorts are giving place to those that succeed well even in our northern climate, and there is now no impediment in the way of its universal cultivation, and this is so simple and the cer-

tainty of its bearing so great, that the fruit may be said to be within the reach of all. As a family fruit it is a universal favorite; coming as the strawberry (from which it is an agreeable change,) is taking its departure, it occupies a very important place in the family economy. It is also very valuable as a market fruit, the firm varieties carrying even better than the strawberry. Increased attention is being paid to it for this purpose, and it is fast becoming a staple in the market.

SOIL AND LOCATION.

I have cultivated the raspberry on light sand, on rich loam, on mucky soil and in very exposed locations, and found that while the light soil produced a very satisfactory yield, yet the same, enriched, gave far better results, as did also the loam and the muck; but on these and all heavily manured lands, the tendency is to overgrowth of bush, which must be checked and thoroughly pruned or the advantage will be more than lost. Thin land may be sufficiently enriched by putting manure around the plants in the fall or winter. We have varieties that will endure the most exposed locations, but the growing canes are liable to be broken down by the winds and however hardy the plant may be, exposure is not desirable. Thus, while I would plant the raspberry on even light soils and in exposed locations, if necessary, yet I would much prefer firm, rich, mellow land, well protected against winds.

CULTIVATION.

This should be such as to give the most benefit to the plants, with the least possible expense; and for this purpose provide for horse culture both ways, by planting from five to six feet each way. To facilitate *planting*, mark the ground one way with a plow, and the other with a marker of any kind. If the kind you are planting propagates from the tips, your plants will be only a mass of fibrous roots, thrown out from a small white sprout or germ, sometimes scarcely visible, and at others from one inch to two inches long. About all that is necessary is to cover them up in the ground; but it is well to place them in the furrow with the germ pointing up, and cover from one inch to two inches deep.

TIME.

On mellow soils I prefer fall planting, but only for the reason that the bush gets a better start and makes a larger growth the first year, which will also yield more fruit; but on stiff, hard soils the plants do not come as well as if put out in spring; but it is well to get the plants in fall, as they may be heeled in and kept safely till spring, and then put out at the first opportunity, so as to insure the largest growth possible; for the Black Caps, particularly, bear heavily on the first year's growth, and by giving it

all the advantages possible, a decided increase of fruit may be expected, which, as we are raising fruit for profit, it is well to look after. And for this purpose, also, avoid the more expansive hoeing, as much as possible, by frequent and thorough horse culture, which is far more beneficial. I wish to urge this as the one thing needful to success, imparting greater benefit at far less expense, and also preventing the growth of weeds, which is far better than to battle with them after they have grown. This must be faithfully attended to in the fore part of the season, as it must be discontinued in August, when layering commences. The first year's growth does not support itself upright, but being long and lithe, it bends over and trails upon the ground; and although it is the common practice to allow them to run, and prune only late in fall, or in spring, cutting off frequently several feet of vine; yet all this waste wood may be incorporated in the bush, and made strong and sturdy, if pruning is commenced as soon the main shoots make, say, two feet growth, pinching off the tip, which will throw the growth into branches, and cause the more stocky bush. This may be repeated to advantage as often as any shoots begin to be too long and trailing.

The second year's growth will be stiff and upright, and the necessities and advantages of pruning equal to the first. The shoots should be stopped at three feet or before; and afterwards, if the branches show a disposition to overgrowth, they should also be nipped. Great advantages accrue from judicious pruning, not only to the fruit, which may easily be doubled in quantity, but also in the

PROPAGATION

of plants, and for this purpose the first year is the most favorable. The frequent pruning will have greatly multiplied the tips, and this should cease about the first of August, and the layering commence the latter part of the month. The best time for the latter is indicated by the tips growing out almost bare of leaves and turning a dark purple for several inches back, and from this time till into October, your attention to this business will be determined by your desire for plants, for the tips will be maturing and increasing till frost puts a check to all growth. Although the purple tip indicates the time when it will root the most readily, yet a large portion will root if layered while still green, and in case there seems to be danger of the tips whipping off by winds, it would be advisable to layer them, as a larger proportion would be saved. I have tried several modes of

LAYERING.

With a common hoe, putting the tips in shallow; with a dibble, putting them in three to four inches, and also with the garden trowel, laying them in slanting, and covering them for several inches back. The latter, I think

the most successful. The tip will make the best plant, if near the surface of the ground; but the end should dip, otherwise it will grow out from the dirt and not root, and, if the stem is covered for several inches, some of the other buds will often root, and thus several plants be obtained from a single tip. This is particularly the case with Miami, Ohio, Golden Cap and some others.

On some accounts, it is better to leave the tips in the ground till spring — those that are not wanted for use in fall — as the last layered will have more time to grow, which they will do at all times when the ground is not frozen. But as the time in spring is precious and needed for planting, &c., it is well to take up the tips and give the bush its final pruning, which will leave it a strong, compact bush, about three feet high, by two to two and a half wide, that will support itself without stakes, leaving a space of two to three feet between the bushes, favorable for picking, and the bush be in the best possible condition for fruiting. The tips that were taken up may be heeled in and kept safely, by plowing a shallow furrow. Scatter the plants in it; cover by turning another one on to them, which in turn may be filled and covered by the next.

Now, plow up the spaces between the rows with one-horse plow, throwing the furrows to the plant, and finishing with a dead furrow in the centre. This added earth upon the roots of the plants is a great protection in winter, and the best and cheapest mulch that can possibly be obtained for the plant during fruiting, which, if drouth ensues, will nearly or quite double the yield, as the writer has proved by actual experiment. After fruiting, cut out the old wood before it becomes dry and hard, as it is injurious to the plant and unsightly, and greatly in the way of layering. A plantation managed according to foregoing directions, will not only give the most profitable financial results, but will also be a source of real pleasure and satisfaction.

DESCRIPTION OF VARIETIES.

KIRTLAND. — Red; propagates by suckers, three or four days earlier than any of the following varieties. Slightly conical in shape; the firmest of the red berries, good size and flavor, and moderately productive. Color bright scarlet; very desirable. \$1.00 per doz.; \$3.00 per 100; \$20.00 per 1000.

PHILADELPHIA. — Red; suckers. A very large, round berry; dark purple when fully ripe; flavor liked by many, and really good, though inferior to some others; wonderfully productive, but too soft for distant market; bush a strong grower, and perfectly hardy. Very desirable indeed. \$2.50 per doz.; \$16.00 per 100.

The following propagate from the tips:

PURPLE CANE. — Red; dark purple when fully ripe; round, pleasant

flavor, very productive, soft; bush strong and hardy. \$1.00 per doz; \$3.00 per 100; \$15.00 per 1000.

CATAWISSA. — Dark purple when ripe; desirable only for fall crop, which is quite abundant and of pleasant flavor. Hardy here. \$2.00 per doz. \$8.00 per 100.

OHIO EVERBEARING. — Black; berry large and firm, and good flavor; bush very strong and hardy; bore with us heavily in July as well as in autumn. Desirable for family or market. \$1.50 per doz.; \$8.00 per 100.

DOOLITTLE'S IMPROVED BLACK CAP. — A well known sort, highly esteemed among market gardeners, as it is productive and firm, bearing carriage well. \$1.00 per doz.; \$2.50 per 100; \$15 per 1000.

MIAMI BLACK CAP. — Similar to Doolittle in habits and appearance. I esteem it the best market berry in cultivation. I have never seen it show the slightest injury from winter; is an unusually strong grower; fruit larger than Doolittle, sweeter and so very firm and productive as to recommend it for extensive cultivation, as it may be shipped to very distant markets. \$1.00 per doz.; \$3.00 per 100; \$18.00 per 1000.

GOLDEN CAP. — One of the most beautiful and best flavored berries we have. Bright golden color, very firm, juicy, hardy and moderately productive. The wood is a light yellow color, a rampant grower; should be well pinched-in while growing. \$1.50 per doz.; \$5.00 per 100.

CLARK. — Red; suckers. Highly recommended in the East. I have only seen a single bush in bearing; fruit very large and quite conical. I think favorably of it. \$8.00 per doz.; \$50.00 per 100.

THORNLESS. — Black. Similar to Doolittle, but earlier, and being destitute of thorns is very desirable. \$8.00 per doz.

SENECA BLACK CAP. — From Doolittle & Wright. Claimed to be larger, sweeter and about two weeks later than Doolittle. \$5.00 per doz.; \$25.00 per 100; \$200.00 per 1000.

GARDEN CULTURE.

Nearly or quite all the advantages of horse culture may be secured by planting quite closely together, and mulching the ground heavily with any coarse material. Follow directions for pruning, and you will not fail of an abundant crop.

BLACKBERRY.

This valuable fruit comes just as the raspberry is closing its season, and as it is an enormous bearer, and easy of cultivation, it is very profitable as a market berry. Preparations from it of cordials, syrups, &c., are highly esteemed for chronic bowel complaints, and no doubt possess high medicinal properties. Unfortunately, these plants are not perfectly hardy in many localities at the North, which undoubtedly limits its culture; but many lay it down in the fall by taking a shovel of earth from one side of the root, and bend the plant over to the ground, turning the root with it. If the Missouri Mammoth proves as hardy and valuable as is claimed for it, (see description,) it will give a new start to the cultivation of this fruit, and thus prove a great acquisition.

CULTIVATION.

As the bush is a rampant grower, it must have plenty of room—not less than six feet each way—and cultivated similar to the raspberry, though the ground should never be worked deep, as that would break the roots and cause them to sucker and weaken the growth of the plant; and for this reason, plants should never be taken from a bearing patch, but should be hoed and cultivated off when first they make their appearance. This will throw the growth into the plant and fruit. Its tendency to overgrowth must be checked by pruning, and the more faithfully this is done, the stronger the bush will be, needing no stakes; also the more hardy and productive, and the plants may be placed nearer together. They should not be allowed to grow over four feet high, and the branches one foot long, before they are nipped off. A field thus kept under subjection and loaded with abundant fruit, presents a very inviting appearance; while the neglected one soon becomes little better than a bramble, and the fruit almost inaccessible.

Where the number of plants is limited and it is not convenient to cultivate both ways, they may be placed in single rows, so that the cultivator can be used on both sides. I would earnestly recommend, that however limited the number of plants, they be set with reference to horse culture; but in the small garden where this is not convenient, as good results may be obtained by planting close together—say four feet—prune closely and mulch heavily with straw, coarse manure or any other material, which will in a measure prevent the growth of suckers and weeds, and counteract the

effects of drouth. Prune out the old wood as soon as through bearing, for it becomes very hard and bony if left till spring.

The blackberry grows readily from root cuttings, and these make the best plants, as they produce a more fibrous root.

VARIETIES.

LAWTON.—A very strong grower, producing enormous crops of large, beautiful fruit. It is reported to have yielded as high as 200 bushels to the acre, which I am not at all disposed to doubt. As our markets are far from being supplied, it sells at very high rates. \$1.00 per doz.; \$2.50 per 100; \$15.00 per 1,000.

DORCHESTER HIGH BUSH.—Earlier and sweeter than Lawton, and matures its crop in a few days' time. \$1.00 per doz.; \$4.00 per 100.

KITTATINNY.—It is claimed that this is decidedly superior to the Lawton in flavor, and is otherwise highly recommended. \$3.00 per doz.; \$20.00 per 100.

EARLY WILSON.—This is also highly esteemed in the East as very early, productive and good. \$7.00 per doz.; \$45.00 per 100.

MISSOURI MAMMOTH.—This new variety claims great merit, and as it is substantiated by the best of testimony, it must be a greatly to be desired acquisition. It claims to be larger, more productive and more hardy than any now in cultivation, having never winter-killed, standing 28 degrees below zero; also superior in flavor. \$2.00 each; \$20.00 per doz, or as low as may be offered. See full history in Price List.

GOOSEBERRIES.

I have succeeded well with this fruit, planting four feet each way, and cultivating the same. The fruit is sold when green, and as it is very hard, it may be shipped in barrels or deep boxes, without injury.

For garden culture, set in single row so as to cultivate with a horse, if convenient—otherwise in square form, and mulch heavy; but never set such fruits along the fence, as is the usual method, for unless you are very thorough with your garden, they will soon be standing in the sod.

HOUGHTON SEEDLING.—The only kind I have cultivated, as it does not mildew; medium size; great bearer. \$1.00 per doz.; \$5.00 per 100.

CURRENTS.

This valuable fruit will grow and bear with great neglect, but it succeeds best on deep and a very rich soil. For extensive field culture plant five feet each way. It bears best on two and three years old wood, therefore prune out all old wood, also the young when too thick. A half dozen strong stems will bear more than a dozen weak ones. It blossoms early and is often injured by late frosts, but a few bushes may be protected for family use by covering with newspapers. Garden culture same as gooseberries.

RED DUTCH.—The kind most commonly raised. Fruit good size and an abundant yielder, particularly with high culture. \$1.00 per doz. ; \$5.00 per 100.

LA VERSAILLAISE.—Very large ; dark red ; probably best red currant. \$2.00 per doz.

WHITE GRAPE.—Best white ; large and abundant bearer. \$1.50 per doz.

GRAPES.

It is not my intention to discourage grape growing by insisting upon a system of culture intricate and difficult to follow. I believe it to be really a simple matter, to be readily understood and practised by all. As to soil and manures, a good dry one, either naturally rich, or made so by the application of rotted manure—as much as would be necessary to give good, liberal, profitable culture to general farm crops—will be quite sufficient; give deep tillage for the sake of moisture during drouth, and altogether a generous, not extravagant culture. My favorite method is to renew the wood from near the root each year, train to single stake and cut away immediately after fruiting. When the plant is first set, cut it back to two eyes. Train to stake while growing, for convenience of cultivation. Unless your root was very strong it will not be best to let the first growth bear, but cut back again as before soon as done growing in the fall, as at that time the plant will not bleed.

The second year, let the two shoots grow again ; train to stake as before ; pinch off all laterals or branches at the tips, when about six inches long. It is claimed that a partial growth of the laterals strengthens the fruit bud. Cut back to three or four feet in fall ; lay them down upon the ground and keep them there by pulling up the stake and laying it across them. This is all the protection needed, as the vines are seldom if ever injured while lying

on the ground, while those that are covered up are frequently injured by the hot sun upon the buds, when first taken up in spring. About the first to tenth of May replant the stakes; tie up the two vines, and grow two more from buds as near the root as possible. Train and prune same as the first, only it is well to train to a second light stake, and not with the fruiting vines. Summer prune the latter, by keeping off most of the summer growth, not allowing the vines to make much more growth than when tied up in spring. This will give air and sun to the fruit, which will generally insure against mildew and rot, and cause the fruit to ripen evenly and be of better flavor than if ripened in the shade. After fruiting, cut out the old wood, leaving the two new shoots for next year. For field culture, plant six to seven feet each way.

Another very good way, is to train the two canes in spring, each way to the lower rail of a trellis, about one foot from the ground, and instead of growing new canes from the root, allow about three or four laterals to grow from each of the two old canes and train them perpendicularly to the upper rails of the trellis. These will be your fruiting canes for the next year, and while they are fruiting, grow canes to replace them from their base, and renew each year by cutting away the upright canes that have fruited. Eight feet each way will do for field culture.

VARIETIES.

I shall not undertake to describe the numerous varieties, but only speak of some of the more common kinds.

CONCORD.—This variety has found no superior as yet, for general culture—a strong, healthy vine; fruit large, abundant and scarcely excelled in flavor; very sweet when fully ripe. Its great fault is the cracking of the fruit. 1 year, 20 cents each; \$2.00 per doz.; \$8.00 per 100. 2 years, fine, 25 per cent. higher.

DELAWARE.—Very sweet; good bearer after it is well established, but such a slow grower that most persons get tired of waiting for it. I would still advise its planting for family use. 2 years, 50 cents each.

HARTFORD PROLIFIC.—Valuable, on account of its earliness. Same price.

DIANA.—Light colored, musk flavored, desirable. Same price.

REBECCA.—Also a light colored grape of delightful flavor, but very shy bearer.

CREVELING.—One of the best of the early hardy sorts.

CLINTON.—A hardy, sour wine grape, but its flavor liked by many.

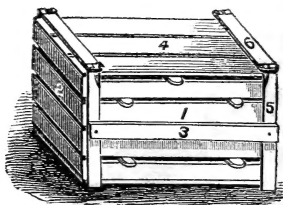
IONA, ADIRONDAC and ISRAELLA.—Three newer sorts that I have not seen in fruit, but are claimed to possess superior qualities. 50 cents each.

GATHERING FRUIT.

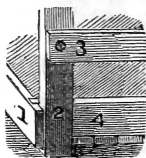
Erect a temporary shed where it will be most convenient to all parts of the patch, and large enough so the gathered fruit, whether in boxes or not, may always be in the shade. Where the fruit is abundant and a large number of pickers employed, it will take one person to inspect and pack the fruit and mark for shipping; one with an alphabetted press book, with two or three leaves to each letter, to keep record of names and number of quarts picked. And this is more important than may at first appear, for where fifty to a hundred pickers are employed, the fruit will come in very rapidly, and besides, as the picking is done by the quart, there will be some greedy ones to take advantage of carelessly kept accounts; to claim more than their due, but where they are systematically kept, the fruit inspected and entered and all deductions for bad work made at the time and in the presence of the picker, more general satisfaction will be given. Another, active and judicious person will be needed in the patch, to guard against picking green or bad fruit; to see that the rows are not hastily and imperfectly picked, or forsaken entirely in search of "a better row." We employ women and girls and pay two to three cents per quart for strawberries and a little more for raspberries. Good order should be maintained and discipline firmly, but not noisily enforced.

Give plain directions in picking. Correct errors promptly, but avoid constant fault-finding and pettishness, which will invariably lose you the respect and good will of the pickers, and limit your control over them. It will sometimes be necessary to expel refractory and inefficient ones, as this is your harvest for which you have expended much money and labor; and now if the work be well done — no green or bad fruit picked, or ripe fruit left to spoil — and all properly handled and shipped, you can easily save the expenses of the day, over slovenly work and badly handled fruit. Each picker is provided with a four-quart packing stand, from which the fruit is emptied into the shipping cases.

SHIPPING.



We formerly shipped entirely in cases made up of half bushel trays, three or four to a case, three inches deep and of any form and size that will give, say 1,100 cubic inches. The annexed cuts will be sufficient explanation.



But quart boxes are now coming in favor and I shall adopt them exclusively

next season, as fruit carries better, and it is on the whole cheaper; the fruit can be picked in the boxes, and for this purpose provide picking stands that hold four boxes, and thus save emptying, and the boxes packed in crates made of very light material. A twenty-four quart crate

is the most convenient to handle, the size and shape of which may be easily determined by arranging the boxes in the required form; make the ends whole, of about three-quarter inch boards, and the top and bottoms of half inch, and the sides of strips even less in thickness.

THE WILCOX QUART FRUIT BOX.

Having adopted this box for my own use, I will furnish it in the splint at \$10.00 per 1000, freight pre-paid, or if not pre-paid, at as low a rate as any box is sold. I used it the past summer and fall, and believe it to be as good as any. There are but two pieces, and it can be put up at the rate of 500 or more per day.

PLANTS BY MAIL.

This is far the best way to send small quantities of plants. Quite an assortment of strawberries and raspberry tips may be put in a four pound package and go in excellent order.

I put up in moss and wrap with *oiled paper*. Any brown wrapping paper will answer, even old newspapers, saturated with linseed oil and dried, which prevents the moss from damping through the outside wrapper, which may be any strong paper, and the package well bound with twine.



Missouri Mammoth Blackberry.

